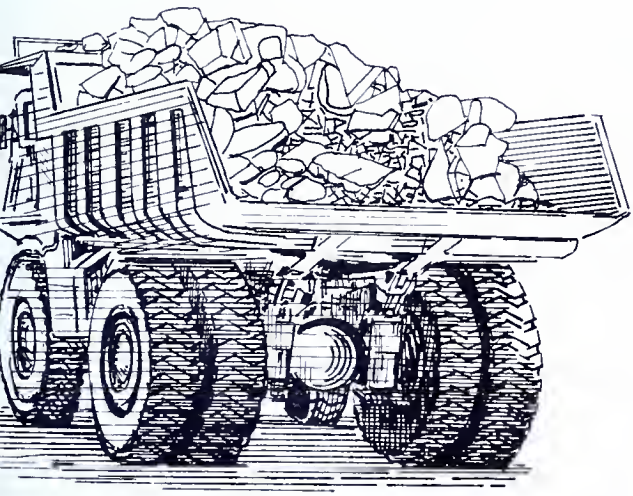
Y G34/4: M69

Information Circular 69

1970

The Mineral Industry of Pennsylvania in 1968



Charles C. Yeloushan

COMMONWEALTH OF PENNSYLVANIA
STATE PLANNING BOARD
Irving Hand, Executive Director
BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist

PENNSYLVANIA STATE LIBRARY
DOCUMENTS

Digitized by the Internet Archive
in 2016 with funding from
This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

https://archive.org/details/mineralindustryo00yelo_3

The Mineral Industry of Pennsylvania

This chapter has been prepared under a cooperative agreement between the Bureau of Mines, U.S. Department of the Interior, and the Pennsylvania Bureau of Topographic and Geologic Survey for collecting information on all minerals except fuels.

By Charles C. Yeloushan [1]

The mineral industry of Pennsylvania reported production in 1968 valued at $904 million, a $5.6 million increase from that of 1967. Portland cement production accounted for an $8.6 million total value increase, but the total value reported for bituminous coal decreased $10.4 million. Stone production continued its strong and steady rise, accounting for a $5.0 million increase in total value. Anthracite production continued its downward trend for the sixth consecutive year with output 800,000 tons less than that of 1967, although its total value increased $1.1 million because of a $0.63 per ton increase in unit price. Copper production increased 21 percent in total value while the total value for the recoverable content of zinc decreased 13 percent. Total values reported for recoverable gold and silver production increased considerably. Other commodities reporting total value increases were masonry cement, clays, sand and gravel, cobalt, iron ore, mica, and pyrites. Commodities with total value decreases were lime, natural gas, natural gas liquids, peat, crude petroleum, and sericite schist. Production of tripoli increased in tonnage but the unit value decreased.

[1] Mining engineer, Bureau of Mines, Pittsburgh, Pa.

Table 1.—Mineral production in Pennsylvania [1]

Mineral	1967		1968	
	Quantity	Value (thousands)	Quantity	Value (thousands)
Cement:				
Portland—thousand 376-pound barrels	40,197	$114,592	43,018	$123,176
Masonry—thousand 280-pound barrels	2,929	7,948	3,151	8,706
Clays [2]—thousand short tons	2,994	16,703	3,034	17,679
Coal:				
Anthracite—do	12,256	96,160	11,461	97,245
Bituminous—do	79,412	419,345	76,200	408,982
Copper—short tons	4,401	3,365	4,850	4,059
Gem stones	NA	4	NA	4
Lime—thousand short tons	1,719	24,715	1,702	24,272
Natural gas—million cubic feet	89,966	25,280	87,987	24,460
Natural gas liquids:				
Natural gasoline and cycle products—thousand 42-gallon barrels	28	77	27	73
LP gases—do	42	114	37	95
Peat—short tons	39,505	437	35,806	385
Petroleum (crude)—thousand 42-gallon barrels	4,387	19,701	4,160	18,698
Sand and gravel—thousand short tons	17,479	29,614	18,101	31,076
Stone—do	60,155	103,157	62,812	108,151
Zinc [3] (recoverable content of ores, etc.)—short tons	35,067	9,468	30,382	8,203
Value of items that cannot be disclosed: Clays (kaolin), cobalt, gold, iron ore, mica, pyrites, sericite-schist, silver, and tripoli	XX	27,718	XX	28,780
Total	XX	898,398	XX	904,044
Total 1957–59 constant dollars	XX	928,234	XX	p 900,383

p Preliminary. NA Not available. XX Not applicable.

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2] Excludes kaolin; included with "Value of items that cannot be disclosed."

[3] Recoverable zinc valued at the yearly price of prime western slab zinc, East St. Louis market. Represents value established after transportation, smelting, and manufacturing charges have been added to the value of ore at the mine.

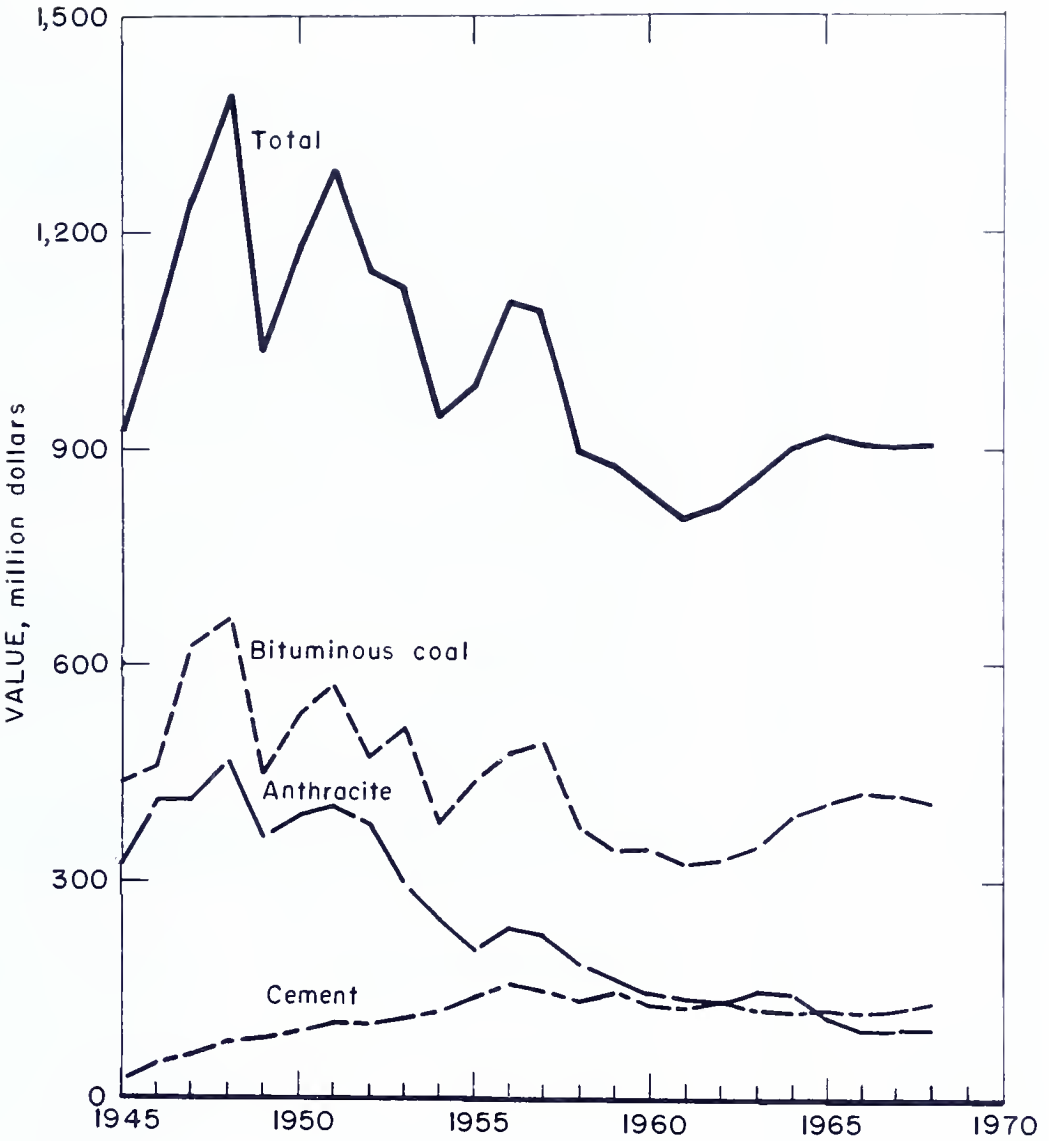


Figure 1.—Value of bituminous coal, anthracite, cement, and total value of mineral production in Pennsylvania.

Table 2.—Value of mineral production in Pennsylvania, by counties [1 2]

(Thousands)

County	1967	1968	Minerals produced in 1968 in order of value
Adams	W	W	Stone, lime, sericite schist, clays.
Allegheny [3]	$27,585	$31,463	Coal, cement, clays, sand and gravel, stone, iron ore (pigment material).
Armstrong	28,875	32,746	Coal, sand and gravel, clays, stone, lime.
Beaver	2,435	3,647	Clays, sand and gravel, coal.
Bedford	W	W	Stone, coal, lime, sand and gravel.
Berks	W	W	Iron ore, cement, stone, clays, cobalt, coal, sand and gravel, pyrites.
Blair	W	W	Stone, clays, coal.
Bradford	W	W	Sand and gravel.
Bucks	W	W	Sand and gravel, stone, clays.
Butler [4]	10,883	11,741	Coal, cement, stone, lime, sand and gravel.
Cambria	W	W	Coal, clays, stone, iron ore (pigment material).
Carbon	5,683	5,714	Coal, stone, sand and gravel.
Centre	18,825	18,117	Lime, stone, coal, sand and gravel, clays.
Chester	4,008	W	Stone, lime, clays.
Clarion	12,878	11,264	Coal, stone, sand and gravel, clays.
Clearfield	29,630	27,605	Coal, clays.
Clinton	4,064	W	Coal, stone, clays.
Columbia	4,009	3,164	Coal, sand and gravel, stone, lime, peat.
Crawford	395	458	Sand and gravel.
Cumberland	W	W	Stone, sand and gravel, clays.
Dauphin	3,099	3,511	Stone, coal, sand and gravel, clays.
Delaware	W	W	Stone.
Elk	W	W	Coal, stone.
Erie	W	W	Sand and gravel, peat.
Fayette	7,083	6,809	Coal, stone, clays.
Forest	W	W	Sand and gravel.
Franklin	1,607	1,658	Stone, sand and gravel.
Fulton	W	W	Do.
Greene	W	80,454	Coal.
Huntingdon	W	W	Sand and gravel, stone, coal, clays.
Indiana	W	W	Coal, clays.
Jefferson	W	W	Coal, clays, stone, sand and gravel.
Lackawanna	W	W	Coal, sand and gravel.
Lancaster	8,023	7,416	Stone, coal, clays, sand and gravel.
Lawrence	W	W	Cement, stone, coal, sand and gravel, clays, peat.
Lebanon	22,017	23,565	Iron ore, copper, stone, lime, cobalt, pyrites, gold, silver.
Lehigh	30,183	30,875	Cement, zinc, stone.
Luzerne	38,990	36,264	Coal, sand and gravel, stone, peat, clays.
Lycoming	W	W	Stone, sand and gravel, coal, tripoli.
McKean	302	284	Clays, stone.
Mercer	1,930	1,405	Sand and gravel, coal, stone, peat.
Mifflin	W	W	Sand and gravel, stone, lime.
Monroe	697	826	Stone, sand and gravel, clays, peat.
Montgomery	W	W	Stone, cement, lime, clays.
Montour	W	W	Stone.
Northampton	59,169	63,071	Cement, stone, sand and gravel.
Northumberland	W	W	Coal, clays, stone.
Perry	W	W	Stone.
Philadelphia	W	W	Sand and gravel.
Potter	125	108	Stone.
Schuylkill	36,017	39,140	Coal, stone, sand and gravel, clays.
Snyder	431	518	Stone, sand and gravel, coal.
Somerset	18,209	18,111	Coal, stone, clays.
Sullivan	184	200	Coal.
Susquehanna	W	W	Stone, coal.
Tioga	3,113	W	Coal, sand and gravel.
Union	W	W	Stone.
Venango	W	W	Coal, sand and gravel, stone.
Warren	930	988	Sand and gravel.
Washington	W	W	Coal, stone, clays.
Wayne	W	800	Sand and gravel, stone, peat.
Westmoreland	W	22,441	Coal, sand and gravel, stone, lime.
Wyoming	W	W	Sand and gravel, stone.
York [4]	9,472	9,891	Cement, stone, lime, clays, sand and gravel, mica.
Undistributed	507,547	409,792	
Total [5]	898,398	904,044	

W Withheld to avoid disclosing individual company confidential data; included with "Undistributed."
[1] Cameron, Juaniata, and Pike Counties are not listed because no production was reported.
[2] Values of natural gas, natural gasoline, LP gases, petroleum, and gem stones unspecified by counties; included with "Undistributed."
[3] Excludes cement; included with "Undistributed."
[4] Excludes cement and lime; included with "Undistributed."
[5] Data may not add to totals shown because of independent rounding.

Table 3.—Indicators of Pennsylvania business activity

	1967	1968	Change (percent)
Employment and labor force, annual average:			
Total labor force—thousands	4,846.3	4,902.4	+1.2
Unemployment—percent of labor force	3.4	3.2	−5.9
Employment:			
Manufacturing—thousands	1,556.9	1,560.3	+.2
Durable goods—do	929.3	925.6	−.4
Lumber and wood products—do	14.9	15.2	+2.0
Furniture and fixtures—do	28.3	29.1	+2.8
Stone, clay, and glass products—do	65.2	63.6	−2.5
Primary metals—do	256.3	253.9	−.9
Fabricated metal products—do	113.4	112.6	−.7
Nonelectrical machinery—do	139.6	139.1	−.4
Electrical machinery—do	159.7	157.7	−1.3
Transportation equipment—do	74.1	74.2	+.1
Instruments—do	38.4	38.3	−.3
Nondurable goods—do	627.6	634.6	+1.1
Food products—do	114.8	114.6	−.2
Apparel and related products—do	179.6	180.4	+.4
Paper products—do	45.3	45.5	+.4
Printing—do	70.6	71.4	+1.1
Chemical products—do	60.5	61.1	+1.0
Nonmanufacturing—do	2,610.3	2,691.3	+3.1
Mining—do	42.0	38.5	−8.3
Contract construction	181.5	192.6	+6.1
Payroll average weekly earnings: Manufacturing	$112.52	$119.20	+5.9
Personal income:			
Total—millions	$37,065	$39,987	+7.9
Per capita	$3,176	p $3,409	+7.3
Construction activity:			
New housing units authorized	48,126	46,147	−4.1
Cement shipments to and within Pennsylvania—thousand 376-pound barrels	17,527	18,468	+5.4
Mineral production—millions	$898	$904	+.7

p Preliminary.

Sources: Pennsylvania Department of Labor and Industry, Bureau of Employment Security; U.S. Department of Labor, Employment and Earnings; U.S. Department of Commerce, Survey of Current Business and Construction Reports.

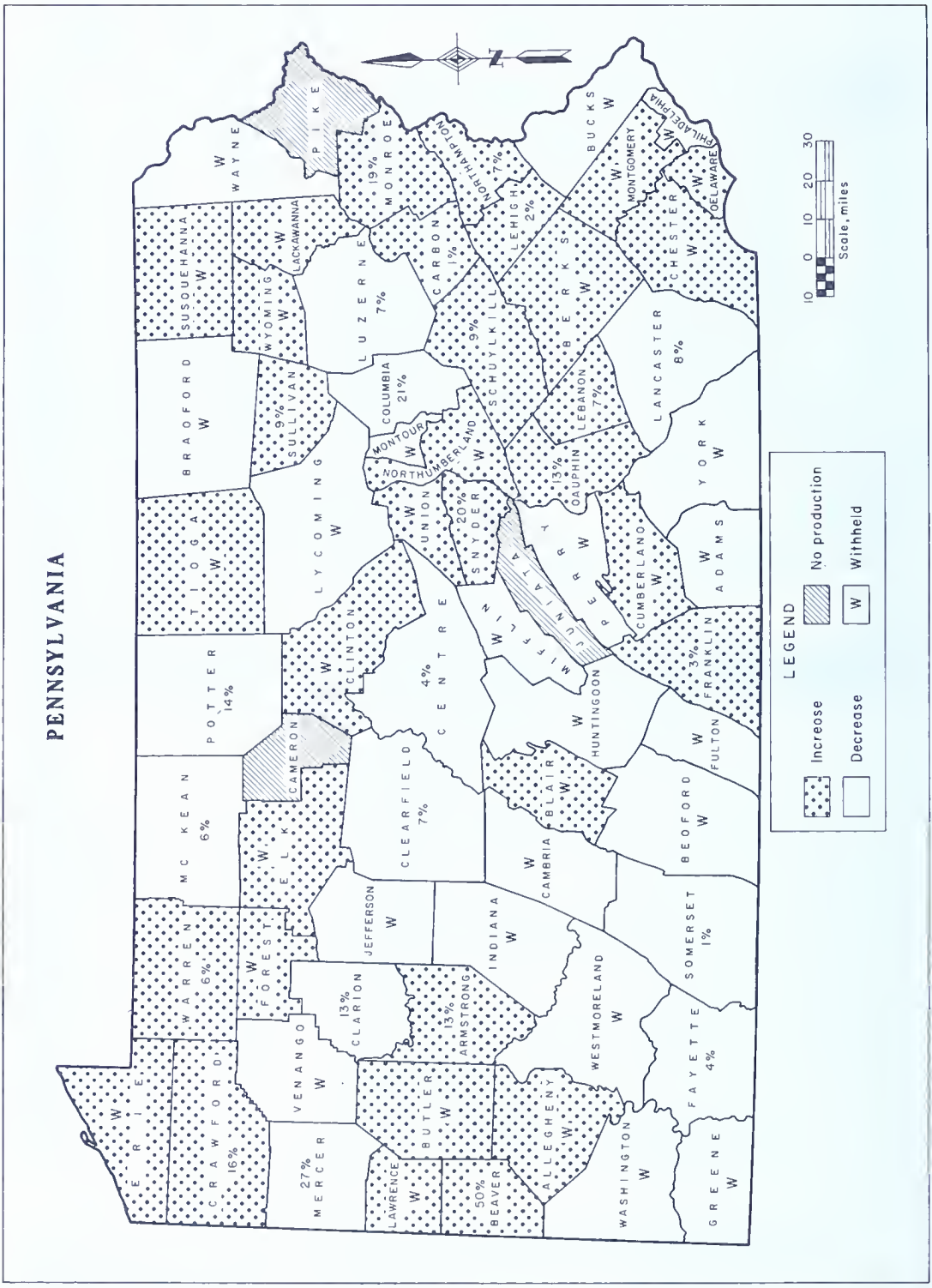


Figure 2.—Change in value of county mineral production from 1967.

Table 4.—Worktime and injury experience in the mineral industries

Year and industry	Average men working daily	Days active	Man-days worked (thousands)	Man-hours worked (thousands)	Number of injuries		Injury rates per million man-hours	
					Fatal	Nonfatal	Frequency	Severity
1967:								
Bituminous coal	22,504	234	5,275	42,247	27	942	22.94	5,642
Anthracite	7,750	219	1,701	12,359	9	609	50.00	5,511
Metal	1,602	280	448	3,586	2	31	9.20	3,663
Nonmetal	1,428	250	357	2,920	-------	89	30.48	740
Sand and gravel	1,197	240	287	2,410	1	55	23.24	3,730
Stone	8,351	267	2,227	18,304	9	281	15.84	3,439
Peat	46	224	10	84	-------	4	47.87	3,770
Total [1]	42,878	240	10,306	81,910	48	2,011	25.14	4,810
1968:[p]								
Bituminous coal	21,500	229	4,933	39,740	30	880	22.87	6,321
Anthracite	6,932	217	1,508	11,011	4	504	46.13	4,182
Metal	1,475	299	441	3,538	1	32	9.33	2,124
Nonmetal	1,405	252	354	2,875	1	103	36.18	6,194
Sand and gravel	1,235	239	296	2,488	-------	70	28.14	3,421
Stone	8,305	270	2,246	18,370	3	279	15.35	1,664
Peat	50	230	12	91	-------	1	10.98	44
Total [1]	40,930	239	9,789	78,115	39	1,869	24.41	4,630

[p] Preliminary.
[1] Data may not add to totals shown because of independent rounding.

REVIEW BY MINERAL COMMODITIES

MINERAL FUELS

Coal (Anthracite).—For the sixth consecutive year anthracite production decreased, falling to a new modern-day low of 11.5 million tons in 1968. Not since 1862 has anthracite production fallen below 12 million tons annually. Anthracite production reached a peak in 1917 with nearly 100 million tons and has steadily decreased since then.

The average value of anthracite was $8.48 per short ton, an increase of $0.63 over that of 1967. Exports to Europe amounted to 880,000 tons which included 820,000 tons consigned to the U.S. military forces in West Germany and the Netherlands.

Of the total production, 10.8 million tons were processed from preparation plants, 606,000 tons from dredges, and 56,000 tons were used at collieries for power and heat; 6.5 million tons was shipped by truck and 4.9 million tons by rail.

Of the 2.5 million tons of anthracite produced from underground mines (22 percent of the total production) 1.5 million tons was mechanically loaded by 131 scraper loaders, 26 mobile loaders, and 184 conveyor and pit-car loaders (including duckbills and other self-loading conveyors). Of the 4.7 million tons of fresh-mined anthracite produced from strip pits (41 percent of the total production), 1.6 million tons came from Lehigh Region, 2.1 million tons from Schuylkill Region, and 1.0 million tons from Wyoming Region. Equipment used to recover coal from culm banks and strip pits included 113 power shovels and 190 draglines. Of the 3.7 million tons of anthracite produced from culm banks (32 percent of the total production), 1.9 million tons came from Schuylkill Region, 960,000 tons from Lehigh Region, and 880,000 tons from Wyoming Region. Of the 606,000 tons of anthracite produced by dredges (5 percent of the total production), 561,000 tons came from Susquehanna River with an average value of $3.68 per ton and 45,000 tons from Schuylkill River with an average value of $3.50 per ton. Anthracite (from all sources) shipped by rail had an average value of $8.06 per ton, $8.84 per ton by truck, and $3.83 per ton for colliery fuel.

The anthracite industry averaged 217 days worked during the year with an average of 6,932 men working daily (818 men less than in 1967). Of the average number of men working daily, 1,683 worked underground, 1,891 in strip pits, 603 at culm banks, 1,773 at preparation plants, 68 on dredges, and 914 at other surface jobs.

Productivity from all operations except dredges averaged 7.31 tons per man-day, while dredges averaged 33.2 tons per man-day for an overall average of 7.62 tons per man-day (0.41 ton better than in 1967).

Schuylkill County replaced Luzerne County as the leading producer with 4.2 million tons, although Luzerne County followed closely with 3.6 million tons. Schuylkill Region produced 6.0 million tons followed by Wyoming Region with 2.9 million tons and Lehigh Region with 2.6 million tons.

Four work deaths were reported for the year (marking the best year in statistical history of fatality experience), five fewer than in 1967. Frequency rate of fatalities dropped to 0.39 per million man-hours of exposure compared with 0.73 for 1967. Nonfatal injuries totaled 504 compared with 609 in 1967 although the frequency rate increased from 49.28 per million man-hours of exposure in 1967 to 45.77 in 1968.

Coal (Bituminous).—Bituminous coal production totaled 76.2 million tons at an average value of $5.37 per ton. The 47.6 million tons sold in the open market averaged $4.40 per ton, and the 28.6 million tons not sold in the open market averaged $6.97 per ton. Of the total output, 57.6 million tons was shipped by rail or water, 15.3 million tons by truck, and the remainder by other means. Unit train shipments totaled 18 million tons.

There were 805 mines, including 261 underground mines producing 54.6 million tons, 489 strip mines producing 20.9 million tons, and 55 auger mines producing 667,000 tons.

Pennsylvania is divided into two bituminous coal-producing districts. District 1 consists of Bedford, Blair, Bradford, Cambria, Cameron, Centre, Clarion, Clearfield, Clinton, Elk, Forest, Fulton, Huntingdon, Jefferson, Lycoming, McKean, Mifflin, Potter, Somerset, and Tioga Counties; that part of Armstrong County including mines served by the P. & S. R.R. on the west bank of the Allegheny River, and north of the Conemaugh division of the Penn Central Railroad; that part of Fayette County including all mines on and east of the line of Indian Creek Valley branch of the Baltimore & Ohio Railroad; that part of Indiana County north of but excluding the Saltsburg branch of the Penn Central Railroad between Edri and Blairsville, both exclusive; and that part of Westmoreland County including all mines served by the Penn Central Railroad, Torrance, and east.

Table 5.—Coal (bituminous) production, by counties

County	Number of mines				Production (thousand tons)	Average price per ton
	Underground	Strip	Auger	Total		
Allegheny	11	11	--	22	5,148	$5.84
Armstrong	25	36	7	68	6,653	4.32
Bedford	3	2	--	5	86	3.73
Blair	1	--	--	1	3	6.45
Butler	9	30	7	46	1,946	4.08
Cambria	46	18	2	66	7,776	5.96
Centre	1	14	--	15	706	4.19
Clarion	1	67	3	71	2,890	3.59
Clearfield	18	58	7	83	6,160	3.93
Clinton	--	11	--	11	794	3.83
Elk	5	11	5	21	359	3.94
Fayette	6	22	--	28	509	5.42
Greene	18	3	--	21	11,688	6.88
Indiana	41	24	12	77	6,648	4.82
Jefferson	13	37	11	61	1,576	3.95
Lawrence	--	22	--	22	1,012	3.49
Lycoming	--	3	--	3	60	4.25
Mercer	--	5	--	5	184	3.44
Somerset	35	60	--	95	4,111	4.00
Venango	--	13	--	13	445	3.41
Washington	14	16	1	31	13,590	6.57
Westmoreland	12	20	--	32	2,948	5.69
Other counties [1]	2	6	--	8	910	3.96
Total	261	489	55	805	[2] 76,200	5.37

[1] Includes data for Beaver, Huntingdon, and Tioga Counties.
[2] Data may not add to total shown because of independent rounding.

District 2 consists of Allegheny, Beaver, Butler, Greene, Lawrence, Mercer, Venango, and Washington Counties; that part of Armstrong County west of the Allegheny River and exclusive of mines served by the P. & S. R.R.; that part of Indiana County including all mines served on the Saltsburg branch of the Penn Central Railroad north of Conemaugh River; Fayette County, except all mines on and east of the line of Indian Creek Valley branch of the Baltimore & Ohio Railroad; and that part of Westmoreland County, including all mines except those served by the Penn Central Railroad from Torrance, east.

District 1 had 184 underground mines accounting for 20.3 million tons, of which 17.5 million tons was sold in the open market for $4.72 per ton; 168 cutting machines cut 2.6 million tons; 131 mines loaded 20.0 million tons mechanically with 219 continuous miners, 74 mobile loaders (22 of which were used with continuous miners), and 50 hand-loaded face conveyors. District 2 had 77 underground mines accounting for 34.3 million tons of which 8.6 million tons was sold in the open market for $5.15 per ton; 94 machines cut 7.0 million tons and 63 mines loaded 34.2 million tons mechanically with 210 continuous miners, 148 mobile loaders (70 of which were used with continuous miners), and three hand-loaded face conveyors.

Strip mines in district 1 totaled 335 and accounted for 16.0 million tons, almost all of which was sold in the open market for $3.82 per ton. Stripping was accomplished by 423 shovels, 241 draglines (eight of which had over 12 cubic yards of capacity), 18 carryall scrapers (five of which had over 12 cubic yards of capacity), 483 bulldozers, 139 drills and 805 trucks. The 154 strip mines in district 2 recovered 4.9 million tons of coal, almost all of which was sold in the open market for $3.85 per ton. Stripping was accomplished with 167 shovels (one of which had the capacity of over 12 cubic yards), 97 draglines (two of which had over 12 cubic yards capacity), 11 carryall scrapers (five of which had over 12 cubic yards of capacity), 178 bulldozers, 55 power drills, and 345 trucks.

The 46 auger mines in district 1 produced 501,000 tons at an average of $4.10 per ton with 39 augers, five bulldozers, two power drills, and 38 trucks. A total of nine auger mines in district 2 produced 166,000 tons at $3.92 per ton with 10 augers, one bulldozer, two power drills, and four trucks.

Eighty-five preparation plants mechanically cleaned 48.5 million tons of coal, of which 41.9 million tons came from underground mines, 6.5 million tons from strip mines, and 124,000 tons from auger mines; 30.5 million tons was cleaned by wet-washing other than jigs, 11.4 million tons by jigs, and 6.6 million tons by pneumatic methods. Coal was crushed at 165 plants for a total of 37.2 million tons with 48 plants treating 10.8 million tons with calcium chloride, oil, or other materials. Thermal drying was conducted at 11 plants with a total of 16 thermal units drying 5.7 million tons.

During the year 30 fatal and 880 nonfatal lost-time injuries occurred. Of the fatalities, 26 occured underground (13 from falls of roof, six on haulage, four on machinery, two from electricity, and one from falls of face, side, rib, or pillar), one on machinery in strip mines, and two in mechanical cleaning plants (one on haulage and one on machinery).

In the 1968 National Safety Competition, Certificates of Achievement in Safety for outstanding safety records in the Underground-Coal Group were awarded to the Robena No. 3 mine for 573,288 man-hours worked without a disabling work injury, Robena No. 2 mine for 541,951 man-hours, and Karen mine for 215,812 man-hours, all owned and operated by United States Steel Corp. Kinseley No. 10 mine, Kinseley Coal Co., was also awarded a Certificate of Achievement in Safety in the Underground-Coal Group for 44,475 man-hours worked without a disabling work injury. Certificates of Achievement in Safety in the Surface-Coal Group were awarded to Sligo strip mine, Allison Engineering Co., for 96,450 man-hours worked without a disabling work injury; Decker strip mine, Decker Construction Co., for 52,230 man-hours; Simca Mining No. 1 strip mine, Simca Mining, Inc., for 43,658 man-hours; and Miller & McKnight strip mine, Miller & McKnight Coal Co., for 35,963 man-hours.

Natural Gas Liquids.—Production of natural gas liquids totaled 64,000 (42-gallon) barrels, a decrease of 8.6 percent from that of 1967. Of the total, 37,000 barrels was liquefied petroleum (LP) gases and ethane from natural gas processing plants, and 27,000 barrels was natural gasoline and cycle products. Natural gasoline and cycle products averaged $2.70 per barrel ($2.75 in 1967) and LP gases and ethane averaged $2.56 per barrel ($2.71 in 1967). Gas-processing plants included Mars Co.'s Lamont plant in the Kane field, Elk County, and Van plant in the Strong field, Venango County; Pennsylvania Gas Co.'s Roystone Station in Warren County; and Peoples Natural Gas Co.'s Greene Station in Greene County. According to The Oil and Gas Journal, proved reserves of gas liquids at yearend totaled 1.1 million barrels.

Peat.—Nine operations in seven counties reported a total peat production of 38,400 tons, a 7.6 percent decrease in tonnage from that of 1967. Sales totaled 35,800 tons (a 9.4-percent decrease from that of 1967) at an average price of $10.74 per ton ($0.32 per ton less than in 1967). Of the total sold, 55 percent was reported as humus, 42 percent as reed sedge and 3 percent as moss; 76 percent was sold in bulk for general soil improvement at $10.23 per ton. Of the total peat produced, 90 percent of the tonnage was shredded for preparation prior to marketing, 10 percent was unprepared, and none was kiln-dried. Luzrene County continued to be the leading producer with 37.5 percent of the total production; other counties producing peat were Columbia, Erie, Lawrence, Mercer, Monroe, and Wayne.

Petroleum and Natural Gas.—Crude petroleum production decreased 5 percent from that of 1967. Production of Penn grade crude petroleum totaled 4.1 million (42-gallon) barrels valued at $18.5 million, in addition to 59,000 barrels of Corning grade crude petroleum produced in Crawford and Erie Counties from the Medina (Lower Silurian) Sandstone, valued at $170,000. The number of producing oil wells at yearend was 42,500, a 500-well increase from that of yearend 1967. Estimated proved recoverable reserves of crude oil at yearend totaled 59.2 million barrels. Operating capacity of 13 crude oil refineries at yearend totaled 629,000 barrels per calendar day.

Production of natural gas totaled 88 billion cubic feet (Bcf), a 2-percent decrease from that of 1967. Production from shallow (Upper Devonian or younger) reservoirs totaled 62 Bcf, while production from deep (Oriskany or older) reservoirs totaled 26 Bcf. The estimated number of producing gas wells at yearend was 17,000. Estimated proved reserves of natural gas, including 487 Bcf in underground storage at yearend, totaled 1,345 Bcf, a decrease of 47 Bcf from that of yearend 1967.

According to the Oil and Gas Division, Pennsylvania Bureau of Topographic and Geologic Survey, 922 wells were drilled during 1968, including 471 oil wells, 254 gas wells, 101 service wells, 25 miscellaneous wells, one stratigraphic test, and 70

dry holes. Of the 26 old wells drilled deeper, 21 were gas wells, one was an oil well, and four were dry. The total footage of all wells drilled was 1,834,131, of which 1,373,480 was development footage, 167,490 was exploratory footage, and 293,161 feet were in service wells, stratigraphic, and miscellaneous drilling. Of 795 well completions, 61 were exploratory (38 percent successful) and 734 were development (96 percent successful).

Warren County continued to be the most active oil area, with 238 new successful wells completed in 1968. Indiana County was the most active gas area, with 101 succesful wells completed. Seismic crews logged 23 crew-weeks during the year compared with 17 crew-weeks in 1967. All of the Commonwealth's acreage under Lake Erie, which comprises 369,989 acres, was offered to the oil and gas industry for lease through competitive bidding. Of the 37 blocks offered, four blocks comprising 24,509 acres were leased for oil and gas exploration. The highest bonus bid for this acreage was $6 per acre, which carries a yearly rental of $1 per acre. In addition, 15,897 acres of onshore State forest lands were leased through competitive bidding for $4.62 per acre plus a yearly rental of $1 per acre. At yearend, a total of 151,191 acres, including 59,109 acres in gas storage. of State forest lands were under lease for oil and gas exploration and development.

Project Ketch was cancelled at midyear. This was an experiment proposed by the Atomic Energy Commission and Columbia Gas Corporation to determine whether it is economically and technically feasible to create a natural gas storage reservoir by detonating an atomic device beneath Sproul State Forest in Clinton County.

NONMETALS

Cement.—Portland cement shipments increased 7 percent above those of 1967 with the average value per 376-pound barrel increasing $0.01 to $2.86. Shipments of masonry cement increased 8 percent over those of 1967 with the average value per 280-pound barrel increasing $0.05 to $2.76. Finished portland cement was produced at 22 plants during 1968 which had a total annual production capacity of 51.2 million barrels, an increase of 300,000 barrels from that of 1967. Masonry cement was shipped from 21 plants during 1968.

The dividing line between eastern and western Pennsylvania is along the eastern boundaries of Potter, Clinton, Centre, Huntingdon, and Franklin Counties. Portland cement shipments of all types from the five plants in western Pennsylvania totaled 11.7 million barrels at an average price of $3.12 per barrel, of which 92 percent was types I–II (general use and moderate heat), 3 percent was type III (high-early-strength), and 1 percent was portland-pozzolan; 51 percent was shipped to locations in western Pennsylvania, 35 percent to Ohio, and 7 percent to West Virginia. Of the total shipments from western Pennsylvania, 10.0 million barrels were shipped by truck in bulk, 1.2 million barrels by truck in containers, 490,000 barrels by railroad in bulk, and 31,000 barrels by railroad in containers.

Portland cement shipments of all types from 17 plants in eastern Pennsylvania totaled 31.3 million barrels at an average price of $2.77 per barrel, of which 90 percent was types I–II, 6 percent type III, and 3 percent white cement; 34 percent was shipped to locations in eastern Pennsylvania, 27 percent to New Jersey, 15 percent to New York, 7 percent to Connecticut, and 6 percent to Maryland. Of the total shipments from eastern Pennsylvania, 17.2 million barrels was by truck in bulk, 9.2 million barrels by railroad in bulk, 3.7 million barrels by truck in containers, and remainder by railroad.

Of the 11.8 million barrels of portland cement produced in western Pennsylvania, 4.2 million barrels were air-entrained; of 32.1 million barrels produced in eastern Pennsylvania, 5.5 million barrels were air-entrained. Portland cement stocks at yearend totaled 1.8 million barrels in western Pennsylvania and 3.7 million barrels in eastern Pennsylvania.

Ready-mixed concrete companies purchased 18.4 million barrels of portland cement shipped from eastern Pennsylvania and 7.3 million barrels from western Pennsylvania; concrete product manufacturers purchased 7.1 million barrels from the east and 1.5 million barrels from the west, building material dealers purchased 3.4 million barrels from the east and 840,000 barrels from the west, and highway contractors purchased 1.8 million barrels from the east and 1.3 million barrels from the west.

Limestone and cement rock were the chief raw materials used for the manufacture of portland cement, 9.7 million tons in eastern Pennsylvania and 3.1 million tons in western Pennsylvania. Other raw materials used included shale, clay, sand, slag, gypsum, iron ore, and mill scale. Eastern Pennsylvania cement plants purchased 768 million kilowatt-hours of electricity and western plants 303 million kilowatt-hours.

Prepared masonry cement shipped from 16 plants in eastern Pennsylvania totaled 2.0 million barrels at an average price of $2.65 per barrel, of which 21 percent was shipped to locations in eastern Pennsylvania, 29 percent to New Jersey, 17 percent to New York, 8 percent to Virginia, 7 percent to Maryland, 4 percent to Connecticut, and 4 percent to the District of Columbia. Shipments of prepared masonry cement from western Pennsylvania totaled 1.1 million barrels at $2.97 per barrel, of which 51 percent was shipped to locations in western Pennsylvania, 38 percent to Ohio, 3 percent to West Virginia, 4 percent to New York, and 3 percent to Michigan.

The leading portland cement producing county was Northampton, followed by Lehigh County. Other counties producing cement were Allegheny, Butler, and Lawrence in the west, and Berks, Montgomery and York in the east. Northampton County was also the leading masonry cement producer with 25 percent of the total State production.

Clays.—Total production of clays (excluding kaolin) increased 1 percent in tonnage and 6 percent in value from that of 1967. Fire clay accounted for 47 percent of the total production, decreasing 1 percent in tonnage and increasing 3 percent in value. Miscellaneous clays and shale accounted for the remaining 53 percent of the total, increasing 3 percent in tonnage and 11 percent in value.

Gem Stones.—Hobbyists and amateur lapidarists collected mineral specimens at scattered locations throughout the State. The State Bureau of Topographic and Geologic Survey published a guide to collecting localities.[2]

Gypsum.—A gypsum-calcining plant using both domestic and imported crude gypsum was operated at Philadelphia.

Iron-Oxide Pigments.—Red iron-oxide pigments were recovered during plant processing of bauxite to alumina in Allegheny County. Yellow iron-oxide pigments in the form of sulfur mud were mined from an open pit in Cambria County. Finished natural iron-oxide pigments were shipped from a plant in Carbon County. Finished natural and manufactured iron-oxide pig-

[2] Laphan David M., and Alan R. Geyer. Mineral Collecting in Pennsylvania. Pennsylvania Bureau of Topographic and Geologic Survey, General Geol. Rept. G 33, (3rd. ed., revised 1969).

Table 6.—Clays sold or used by producers, by kinds and uses [1]

(Thousand short tons)

Use	Fire clay		Miscellaneous clay	
	1967	1968	1967	1968
Refractories:				
Firebrick and block	624	681	-------	-------
High alumina brick	74	15	-------	-------
Other	[2] 164	[2] 91	W	W
Heavy clay products:				
Building brick	488	585	1,222	1,223
Vitrified sewer pipe	64	45	63	67
Undistributed	[3] 21	[3] 7	[4] 274	[4] 319
Total	1,435	1,424	1,559	[5] 1,610

W Withheld to avoid disclosing individual company confidential data.
[1] Excludes kaolin.
[2] Includes mortar, clay crucibles, foundries and steel works (bulk), and other refractories.
[3] Includes other heavy clay products, exports (1967), pottery, floor and wall tile, filler (1967), and portland and other hydraulic cements (1968).
[4] Includes other heavy clay products, exports (1968), pottery, floor and wall tile, lightweight aggregate, filler, foundries and steelworks (bulk), and portland and other hydrulic cements.
[5] Data may not add to total shown because of independent rounding.

ments were shipped from two plants in Northampton County.

Lime.—Production of lime (quicklime and hydrated lime) decreased 1 percent in tonnage and 2 percent in total value. Quicklime production decreased from 1.46 million tons in 1967 to 1.42 million tons, while hydrated lime increased from 264,000 tons in 1967 to 284,000 tons. The average price per ton of quicklime decreased from $14.00 to $13.90 while that of hydrated lime decreased from $16.44 to $16.02 per ton. Regenerated quicklime and hydrated lime production totaled 45,800 tons and was valued at $17.52 per ton. Of the total quicklime sold and used, 85 percent was consumed by the chemical and other industrial markets, with the remainder distributed among construction, agricultural, and refractory markets. Of the total hydrated lime sold and used, 45 percent was consumed by the chemical and other industrial markets with the remainder being distributed among agricultural and construction markets. Fourteen plants were operated in 12 counties. Of the 14 producing plants, three plants sold only hydrated lime, three plants sold only quicklime, one plant used only quicklime, one plant sold and used quicklime and hydrated lime, and six plants sold both quicklime and hydrated lime. In addition, regenerated quicklime was used at two pulp and paper mills in Blair County and one in Clinton County; regenerated quicklime and hydrated lime were used at one plant in York County.

Centre County continued to be the leading producer, with three large plants each producing quicklime and hydrated lime and accounting for 47 percent of the total quicklime sold and used, 25 percent of the hydrated lime sold and used, and 38 percent of the total lime value. Of the total lime sold and used, 55 percent was consumed in Pennsylvania, 16 percent in Maryland, 8 percent in Ohio, 6 percent in New Jersey, and 5 percent in New York.

Mica.—Residual mica was produced and processed near Glenville in York County. The processed mica was used in paint, welding rods, rubber, textile coating, grease, electric insulation, and roofing.

Perlite (Expanded).—Crude perlite from out-of-State sources was expanded at one plant each in Allegheny, Delaware, Lehigh, Montgomery, Philadelphia, and York Counties. The name of Refractory & Insulation Corp. in Montgomery County has been changed to C–E Refractories, Division of Combustion Engineering, Inc. Expanded perlite was sold or used chiefly for building plaster, with other uses being loose fill insulation, concrete aggregate, soil conditioning, filler, filter, cryogenic applications, charbase, refractory, foundry, and material for castable insulation and bonding motors.

Pyrites.—Pyrites was recovered in the form of flotation concentrate during the milling of magnetite in Berks and Lebanon Counties and shipped to Sparrows Point, Md., for further processing.

Sand and Gravel.—Production of sand and gravel increased 4 percent in total tonnage and 5 percent in total value. Commercial sand production totaled 10.4 million tons, of which 86 percent was used for building, paving, and fill, selling for an average value of $1.54 per ton, and the remainder was used for other construction purposes, and for industrial unground sand (for glass, molding, grinding and polishing, blast, fire or furnace, engine, filtration, and other uses) and industrial ground sand (for abrasives, chemical, filler, foundry uses, glass, pottery, porcelain, tile, and other uses). Commercial gravel production totaled 7.6 million tons selling for an average value of $1.55 per ton of which 47 percent was used for building construction purposes, 44 percent for paving construction, and the remainder for fill, railroad ballast, and miscellaneous uses. Of the total commercial sand and gravel production, 75 percent was shipped by truck and the remainder by waterway and railroad. Commercial sand and gravel plants included 92 stationary, eight portable, and six dredges.

Bucks County continued to be the leading producing county with 17 percent of the total commercial tonnage and value.

Stone.—Production from all types of stone increased 4 percent in total tonnage and 5 percent in total value. Of the total stone production, 62.7 million tons was crushed or broken. Of the total crushed or broken stone, 51.5 million tons was limestone, 4.1 million tons basalt (trap rock), 3.0 million tons sandstone, 1.8 million tons miscellaneous stone, and the remainder granite, dolomite, shell, slate, and quartz-

Table 7.—Sand and gravel sold or used by producers, by classes of operations and uses

(Thousand short tons and thousand dollars)

Class of operation and use	1967		1968	
	Quantity	Value	Quantity	Value
Commercial operations:				
Sand:				
Molding	157	$461	142	$421
Building	4,855	7,424	5,420	8,296
Paving	3,678	5,636	3,433	5,343
Fire or furnace	71	223	50	171
Fill	24	20	28	38
Undistributed [1]	1,292	4,336	1,313	4,725
Total	10,077	18,100	10,386	18,994
Gravel:				
Building	2,562	4,141	3,599	5,921
Paving	4,147	6,639	3,367	5,324
Fill	343	214	373	214
Undistributed [2]	298	441	286	386
Total	7,350	11,435	7,625	11,845
Total sand and gravel	17,427	29,535	18,011	30,839
Government-and-contractor operations:				
Sand: Other	52	79	67	171
Gravel:				
Paving	--------	--------	3	7
Other	--------	--------	20	59
Total	--------	--------	23	66
Total sand and gravel	52	79	90	237
All operations:				
Sand	10,129	18,179	10,453	19,165
Gravel	7,350	11,435	7,648	11,911
Total	17,479	29,614	18,101	31,076

[1] Includes glass, grinding and polishing, blast, engine, filtration (1968), ground, and other sand.
[2] Includes railroad ballast, miscellaneous, and other gravel.

ite; 60 percent was used as aggregates, 18 percent for cement manufacture, 8 percent for furnace flux, 5 percent for lime manufacture, 2 percent for agricultural purposes, and the remainder for railroad ballast, riprap, refractory, and other uses.

Dimension stone production decreased 2 percent in tonnage but increased 1 percent in total value from that of 1967. Slate accounted for 36 percent of the total dimension stone tonnage and 67 percent of its value, while sandstone and quartzite accounted for 44 percent of the total tonnage but less than 22 percent of the total value.

The "Sentinels of Safety" trophy winner in the 1968 National Safety Competition in the Quarry Group was the Millard Quarry, Bethlehem Mines Corp., Annville, Lebanon County, Pa., for working 441,522 injury-free man-hours. The Millard Quarry also won the trophy in 1967, its first year in the competition. Other operations competing in the Quarry Group received Certificates of Achievement for their outstanding safety record, including Bethlehem Quarry, Bethlehem Mines Corp., Bethlehem, Pa., for 78,571 man-hours worked without a disabling work injury; Valley Forge Quarry, Martin Marietta Corp., Appalachian Stone Division, Malvern, Pa., for 77,573 man-hours worked; Wampum Quarry, Medusa Portland Cement Co., Wampum, Pa., for 59,410 man-hours worked; Reliance "B" Quarry, Giant Portland Cement Co., Egypt, Pa., for 54,625 man-hours worked; and Llanerch Quarry, V. Di Francesco & Sons Co., Havertown, Pa., for 54,514 man-hours worked without a disabling work injury.

Sulfur.—Sulfur was recovered at four refineries, two in Delaware County and two in Philadelphia County. Of the refineries in Philadelphia County, one recovered sul-

Table 8.—Stone sold or used by producers, by uses

(Thousand short tons and thousand dollars)

Use	1967		1968	
	Quantity	Value	Quantity	Value
Dimension stone:				
Building stone	86	$1,417	75	$1,361
Curbing and flagging	34	1,158	34	1,091
Other uses [1]	31	3,838	40	4,009
Total [2]	152	6,414	148	6,460
Crushed and broken stone:				
Riprap	248	356	160	203
Aggregates [3]	36,883	52,585	37,649	55,506
Furnace flux (limestone)	5,790	11,392	5,316	10,828
Railroad ballast	743	1,170	702	1,067
Agricultural	1,110	3,414	1,490	4,080
Other uses [4]	15,230	27,827	17,347	30,005
Total [2]	60,004	96,744	62,664	101,690
Grand total [2]	60,155	103,157	62,812	108,151

[1] Includes monumental, surface plates, refractory blocks, roofing slate and millstock.
[2] Data may not add to totals shown because of independent rounding.
[3] Includes dense graded road base stone and concrete, bituminous, macadam, and surface treatment aggregates.
[4] Includes cement and lime manufacture, refractory, fillers, chemical, and other uses.

Table 9.—Stone sold or used by producers, by counties

(Thousand short tons and thousand dollars)

Counties	1967		1968	
	Quantity	Value	Quantity	Value
Allegheny, Clarion, Washington	623	$1,267	435	$860
Armstrong	443	926	412	886
Bedford, Franklin, Fulton	1,882	3,015	1,871	2,860
Berks	3,594	4,756	4,173	5,169
Blair	1,523	1,840	1,700	2,078
Bucks	3,229	4,398	3,432	5,026
Butler	1,618	2,965	2,082	3,707
Carbon, Monroe, Schuylkill	842	2,059	886	2,188
Centre	3,955	5,911	3,483	5,564
Chester	2,057	3,887	2,540	4,544
Clinton, Lycoming, Montour, Union	1,735	2,396	2,127	2,984
Cumberland	1,036	1,659	1,370	2,211
Dauphin	1,001	1,617	W	W
Elk, McKean, Potter	58	227	59	215
Fayette, Somerset	1,422	3,131	1,478	3,271
Lancaster	3,644	5,205	3,338	4,606
Lawrence, Mercer	2,153	3,336	2,252	3,639
Lebanon	1,727	3,069	2,142	3,677
Lehigh	2,377	2,644	W	W
Luzerne	619	862	W	W
Mifflin, Snyder	621	810	664	896
Montgomery	5,374	8,908	5,330	9,119
Northampton	5,737	9,443	W	W
Northumberland	70	113	87	248
Susquehanna, Wayne, Wyoming	361	1,180	416	1,268
Venango	---	---	5	22
Westmoreland	1,440	2,825	W	W
York	3,772	8,281	3,945	8,732
Other counties [1]	7,242	16,426	18,591	34,379
Total [2]	60,155	103,157	62,812	108,151

W Withheld to avoid disclosing individual company confidential data.
[1] Includes Adams, Cambria, Columbia, Delaware, Huntingdon, Jefferson, and Perry Counties and data indicated by symbol W.
[2] Data may not add to totals shown because of independent rounding.

fur by the Claus process, and the other recovered hydrogen sulfide by the Girdler system, using diethanolamine and monethanolamine, and molten sulfur by the improved Claus-type process. In Delaware County, one refinery recovered sulfur by using single-stage catalytic oxidation of hydrogen sulfide, and the other by using the Claus-type process.

Talc (Sericite-Schist).—Sericite-schist was produced from an open pit and processed near Aspers, Adams County, for use as an asphalt filler, and for use in insecticides, joint cement, and enamel coatings.

Tripoli (Rottenstone).—Tripoli was produced by two operations in Lycoming County. One operation near Oriole processed the material by drying, crushing, and grinding in Raymond Roller Mills and used it as an abrasive and as a filler. The other operation near Muncy prepared the material for use as a filler.

Vermiculite (Exfoliated).—Crude vermiculite was exfoliated at two operations. One operation (in Lawrence County) produced the exfoliated product for use as loose-fill insulation, building plaster aggregate, fire base, concrete aggregate, and for agricultural purposes. The other operation (in Bucks County) prepared the material for home insulation, packing, concrete and plaster aggregate, and horticultural purposes.

METALS

Cadmium.—Cadmium was recovered as a byproduct in the smelting of zinc concentrate at the Josephtown plant in Beaver County and at the Palmerton plant in Carbon County. Cadmium production increased considerably from that of 1967.

Cobalt.—Cobalt was recovered as a byproduct of pyrite concentrate produced from the mining and flotation of magnetite in Berks and Lebanon Counties. The cobalt content of pyrite concentrate shipments increased slightly from that of 1967.

Copper, Gold, and Silver.—Copper concentrate (recovered by flotation of magnetite iron ore mined in Lebanon County and shipped to western refineries for processing) increased 10 percent in tonnage and 21 percent in value. The concentrate contained gold and silver both of which increased considerably in tonnage and value from that of 1967.

Iron Ore.—Usable iron ore production and shipments increased 4 percent in tonnage and value. Shipments were in the form of pellets produced at agglomerating plants located at magnetite mines in Berks and Lebanon Counties. Most of the iron ore pellets were shipped to company-owned iron and steel plants in the State and in Maryland.

Iron and Steel.—Production of pig iron totaled 21.0 million tons, of which 93 percent was basic pig iron, and the remainder Bessemer, malleable, and direct castings.

Consumption of iron ore totaled 20.4 million tons, of which 56 percent was used in blast furnaces, 40 percent in agglomerating plants, and the remainder in the steel furnaces. Receipts of iron ore during the year totaled 23.5 million tons of which 64 percent came from foreign countries and 36 percent from domestic sources. Iron ore stocks at the beginning of the year were 12.3 million tons, and 11.0 million tons at yearend, with 4.3 million tons sold and shipped to other plants during the year. Fluxes consumed by the iron and steel industry included 2.8 million tons of limestone, 3.4 million tons of dolomite, and 480,000 tons of other type fluxes. Other materials consumed included 1.5 million tons of mill cinder and roll scale, 746,000 tons of raw flue dust, 1.2 million tons of steel furnace slag, 13 million tons of coke, and 750,000 tons of coke breeze. Steel furnaces consumed 19.7 million tons of pig iron and hot metal, and 11.1 million tons of home and purchased scrap. Blast furnaces consumed 755,000 tons of home and purchased scrap and 272,000 tons of slag scrap. Agglomerates consumed in blast furnaces included 8.2 million tons of U.S. sinter (regular), 5.3 million tons of iron ore pellets (regular), and 2.5 million tons of foreign iron ore and other agglomerates. Scrap produced at blast furnaces totaled 176,000 tons, slag produced 6.2 million tons, and flue dust recovered 662,000 tons.

Forty-five blast furnaces were active during the year (one less than in 1967) at 20 plants operated by nine companies. Fifteen blast furnaces were idle during the year.

Steel production, according to the American Iron and Steel Institute, totaled 31.0 million tons, of which 19.7 million tons

were from open hearth and Bessemer, 8.0 million tons from basic oxygen process, and 3.3 million tons from electric furnaces. Production of hot-rolled steel products totaled 22.6 million tons; hot-rolled bars and light structural shapes, 2.6 million tons; concrete reinforcing bars, 930,000 tons; wire rods, 660,000 tons; and 1.9 million tons of blanks, tube rounds or pierced billets for seamless tubing.

Zinc.—Production of zinc ore (based on the quantity of recoverable zinc metal) decreased 13 percent in tonnage and value. The ore was mined and processed in Lehigh County, and the concentrate shipped to a smelter in Carbon County.

Smelters located at Palmerton in Carbon County and at Josephtown in Beaver County received zinc concentrate from company-owned mines and concentrating plants and from other domestic and foreign sources. Products from the Palmerton smelter included rolled zinc, slab zinc, zinc base die casting alloys, dry-battery shells, zinc oxide, spiegeleisen, and cadmium. Products from the Josephtown smelter included zinc and cadmium metal, lead-free zinc oxide, and sulfuric acid.

Table 10.—Principal producers

Commodity and company	Address	Type of activity	County
Abrasives:			
Nonmetallic: Satellite Alloy Corp.	9800 McKnight Rd. Pittsburgh, Pa. 15237	Plant	Allegheny.
Metallic:			
Abrasive Metals Co	26th & B. & O. RR Pittsburgh, Pa. 15222	do	Do.
Durasteel Abrasive Co	2601 Smallman St. Pittsburgh, Pa. 15222	do	Westmoreland.
Industeel Corp	37th & A. V. RR Pittsburgh, Pa. 15222	do	Allegheny.
The Pangborn Corp., Rotoblast Abrasive Division.	P.O. Box 280 Hagerstown, Md. 21740	do	Butler.
Cement:			
Allentown Portland Cement Co.[1]	7th St. at Thruway Allentown, Pa. 18101	do	Berks and Montgomery.
Bessemer Cement Co., Subsidiary of Louisville Cement Co.	510 Hanna Bldg. Cleveland, Ohio 44115	do	Lawrence.
Coplay Cement Mfg. Co.[1]	North 2d St. Coplay, Pa. 18037	do	Lehigh.
Do	Easton Rd. Nazareth, Pa. 18064	do	Northampton.
Dragon Cement Co., Div. of Martin Marietta Corp.[1]	5A Joyce Kilmer Ave. New Brunswick, N.J. 08903	do	Do.
Giant Portland Cement Co.[1]	1500 Chestnut St. Philadelphia, Pa. 19102	do	Lehigh.
Green Bag Cement Co., Div. of Marquette Cement Mfg. Co.	20 N. Wacker Dr. Chicago, Ill. 60606	do	Allegheny.
Hercules Cement Co., Div. of American Cement Corp.[1]	555 City Line Ave. Bala-Cynwyd, Pa. 19004	do	Northampton.
Keystone Portland Cement Co.[1]	1400 So. Penn Square Philadelphia, Pa. 19102	do	Do.
Lehigh Portland Cement Co.[1]	718 Hamilton St. Allentown, Pa. 18105	do	Lehigh.
Lone Star Cement Corp.[1]	P.O. Box 6237 West End Br. Richmond, Va. 23230	do	Northampton.
Medusa Portland Cement Co.[2]	P.O. Box 5668 Cleveland, Ohio 44101	do	Lawrence.
Do.[3, 4]		do	York.
National Portland Cement Co.[1]	1023 W. St. George Ave. Linden, N.J. 07036	do	Northampton.
Penn-Dixie Cement Corp.[5]	P.O. Box 152 Nazareth, Pa. 18064	do	Butler.
Do.[1]		do	Northampton.
Universal Atlas Cement Div. U.S. Steel Corp.	Chatham Center Pittsburgh, Pa. 15230	do	Allegheny.
Do.[1]		do	Northampton.
The Whitehall Cement Mfg. Co.[1]	123 S. Broad St. Philadelphia, Pa. 19109	do	Lehigh.
Clay and shale:			
Fire:			
Drexel Refractories	P.O. Box 50 Kittanning, Pa. 16201	Underground	Armstrong.
Eastvale-Standard Clay Products Co.[4]	Box 681 Beaver Falls, Pa. 15010	do	Beaver.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Clay and shale—Continued			
Fire—Continued			
Freeport Brick Co	Drawer F. Freeport, Pa. 16229	Underground	Armstrong.
Freeport Brick Co., Kittanning Brick Div.	R.D. 1 Adrian, Pa. 16210	do	Do.
Hanley Co.[6]	28 Kennedy St. Bradford, Pa. 16701	do	Jefferson.
Harbison-Walker Refractories Co.	2 Gateway Center Pittsburgh, Pa. 15222	do	Armstrong and Clearfield.
Do		Pit	Centre, Clearfield, Fayette.
The Negley Fire Clay Co	Box 264 New Galilee, Pa. 16141	Pit	Lawrence.
Ralph A. Veon, Inc	Darlington, Pa. 16115	Pit	Do.
Kaolin: The Philadelphia Clay Co.	236 W. North St. Carlisle, Pa. 17013	Pit	Cumberland.
Miscellaneous:			
Alwine Brick Co	New Oxford, Pa. 17350	Pit	Adams.
Bylite Corp	P.O. Box 1628 N. Station Wilkes Barre, Pa. 18700	Pit	Luzerne.
Fenati Brick Co., Inc	New Castle, Pa. 16101	Pit	Lawrence.
Glen-Gery Corp	227 N. 5th St. Reading, Pa. 19600	Pit	Berks, Dauphin, Lancaster, Northumberland, York.
Mc Avoy Vitrified Brick Co.	Phoenixville, Pa. 19460	Pit	Chester.
McQuiston Coal Co	109 East Moody New Castle, Pa. 16101	Pit	Lawrence.
Milliken Brick Co., Inc.[4]	2100 Montier St. Pittsburgh, Pa. 15221	Pit	Allegheny.
The Robinson Clay Product Co	65 W. State St. Akron, Ohio 44309	Pit	Montgomery.
Coal:			
Anthracite:			
Blue Coal Corp	101 S. Main St. Ashley, Pa. 18706	Underground	Luzerne.
Do.[7]		Culm bank	Lackawanna and Luzerne.
Blue Coal Corp		Strip	Luzerne.
Carbondale Coal Co., Inc.[4]	78 Cottage St. Carbondale, Pa. 18407	do	Lackawanna.
Gangloff Brothers	New Ringgold, Pa. 17960	Culm bank	Dauphin.
Gangloff Brothers [4]		do	Northumberland.
Glen-Nan Coal Co., Inc	St. Mary's and River Road Wilkes-Barre, Pa. 18702	Underground and strip.	Luzerne.
Greenwood Stripping Corp	One Venice St. Nesquehoning, Pa. 18240	Underground	Carbon and Schuylkill.
Jeddo-Highland Coal Co.[8]	800 Exeter Ave. W. Pittston, Pa. 18643	Strip	Luzerne.
Jeddo-Highland Coal Co		Culm bank	Do.
Kerris & Helfrick, Inc	Lehigh & Popular St. Mt. Carmel, Pa. 18751	Strip	Columbia.
Kerris & Helfrick, Inc.[8]		do	Northumberland.
Lehigh Valley Anthracite, Inc.	800 Exeter Ave. W. Pittston, Pa. 18643	Culm bank	Carbon and Schuylkill.
Do		Strip	Columbia and Schuylkill.
Do.[4]		Strip	Luzerne.
Do.[9]		Culm bank	Do.
Pennsylvania Power & Light Co.	901 Hamilton St. Allentown, Pa. 18101	Dredge	Lancaster.
Ken Pollock, Inc.[4]	Route 11 Hunlock Creek, Pa. 18621	Culm bank	Luzerne.
Reading Anthracite Co.[4]	200 Mahantongo St. Pottsville, Pa. 17901	do	Northumberland.
Reading Anthracite Co		Strip	Do.
Do.[9]		do	Schuylkill.
Do.[8]		Culm bank	Do.
Bituminous:			
Barnes & Tucker Co.[7]	357 Lancaster Ave. Haverford, Pa. 19041	Underground	Cambria.
Barnes & Tucker Co		do	Indiana.
Bethlehem Mines Corp.[8]	701 E. 3d St. Bethlehem, Pa. 18016	do	Cambria.
Do.[7]		do	Washington.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Coal—Continued			
Bituminous—Continued			
Buckeye Coal Co	P.O. Box 900 Youngstown, Ohio 44501	Underground	Greene.
Gateway Coal Co. for J & L	Box 608 California, Pa. 15419	do	Do.
Harmar Coal Co.[4]	Box 500 Library, Pa. 15129	do	Allegheny.
Jones & Laughlin Steel Corp.	Box 608 California, Pa. 15419	do	Greene.
Mathies Coal Co	Box 500 Library, Pa. 15129	do	Washington.
Pittsburgh Coal Co.[4]		do	Do.
United States Steel Corp.[7]	525 Wm. Penn Place Pittsburgh, Pa. 15219	do	Greene.
Do.[4]		do	Washington.
Graphite (synthetic): Stackpole Carbon Co.	St. Marys, Pa. 15857	Plant	Elk.
Gypsum (calcined): United States Gypsum Co.[10]	101 S. Wacker Dr. Chicago, Ill. 60606	do	Philadelphia.
Iron ore:			
Bethlehem Mines Corp.[11]	701 E. 3d St. Bethlehem, Pa. 18016	Underground	Berks.
Do.[12]		do	Lebanon.
Iron oxide pigments:			
Crude:			
Allegheny Ludlum Steel Corp.	2000 Oliver Bldg. Pittsburgh, Pa. 15222	Plant	Allegheny.
Lanzendorfer Minerals Co.	Twin Rocks, Pa. 15960	Pit	Cambria.
Finished:			
Minerals, Pigments, & Metals Div., Chas. Pfizer & Co., Inc.	640 North 13th St. Easton, Pa. 18042	Plant	Northampton.
The Prince Manufacturing Co.	Bowmanstown, Pa. 18030	do	Carbon.
Reichard-Coulston, Inc	15 East 26th St. New York, N.Y. 10010	do	Northampton.
Lime:			
Primary:			
Baker Stone Co.[1]	R.D. 5 Bloomsburg, Pa. 17815	do	Columbia.
The J. E. Baker Co.[1]	P.O. Box 1189 York, Pa. 17405	do	York.
Mercer Lime & Stone Co	Branchton, Pa. 16021	do	Butler.
National Gypsum Co.[1]	325 Delaware Ave. Buffalo, N.Y. 14202	do	Centre.
Standard Lime & Refrac. Co., Div. Martin Marietta Corp.[1]	2000 First Nat'l. Bank Bldg. Baltimore, Md. 21203	do	Do.
Warner Company [1]	1721 Arch St. Philadelphia, Pa. 19103	do	Centre and Chester.
Regenerated:			
Combined Paper Mills, Inc.	Roaring Spring, Pa. 16673	do	Blair.
P. H. Glatfelter Co	Spring Grove, Pa. 17362	do	York.
Hammermill Paper Co	Lock Haven, Pa. 17745	do	Clinton.
West Virginia Pulp & Paper Co.	Tyrone, Pa. 16686	do	Blair.
Mica (residual): Micalith Mining Co., Inc.	P.O. Box 1671 Phoenix, Ariz. 85001	Pit	York.
Peat:			
Benton Peat	Benton, Pa. 17814	Bog	Columbia.
Blue Ridge Industries, Inc	Box 128, R.D. 2 White Haven, Pa. 18661	Bog	Luzerne.
D. M. Boyd Co	226 Francis St. New Wilmington, Pa. 16142	Bog	Mercer.
Corry Peat Products Co	515 W. Columbus Ave Corry, Pa. 16407	Bog	Erie.
International Peat, Inc	R.D. 1 White Haven, Pa. 18661	Bog	Monroe.
Pennsylvania Peat Moss, Inc	21st. & Laurel Sts. Hazelton, Pa. 18201	Bog	Luzerne.
Stillers Blue Ridge Peat Co	R.D. White Haven, Pa. 18661	Bog	Do.
Wayne Peat Humus Co., Inc	P.O. Box 315 Gouldsboro, Pa. 18424	Bog	Wayne.
Welker's Greenhouse, Inc	New Castle, Pa. 16101	Bog	Lawrence.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Perlite (expanded):			
C–E Refractories	Port Kennedy, Pa. 19463	Plant	Montgomery.
Insul-Fil Manufacturing Co	Box 325 Primos, Pa. 19018	do	Delaware.
Pennsylvania Perlite Corp	P.O. Box 2002 Lehigh Valley, Pa. 18001	do	Lehigh and York.
Perlite Manufacturing Co	P.O. Box 478 Carnegie, Pa. 15106	do	Allegheny.
Petroleum refineries:			
Atlantic Richfield Co	260 S. Broad St. Philadelphia, Pa. 19102	do	Philadelphia.
Franklin Refinery, Div. of Sonneborn Sons, Inc.	Franklin, Pa. 16323	do	Venango.
Gulf Oil Corp	P.O. Box 7408 Philadelphia, Pa. 19101	do	Erie.
Kendall Refining Co., Div. of Witco Chemical Co.	Bradford, Pa. 16701	do	McKean.
Pennsylvania Refining Co	Karns City, Pa. 16041	do	Butler.
Pennzoil Company	Oil City, Pa. 16301	do	Venango.
Quaker State Oil Refining Corp.	Farmers Valley, Pa. 16749	do	McKean and Venango.
Sinclair Oil Corp	600 Fifth Ave. New York, N.Y. 10001	do	Delaware.
Sun Oil Company	1608 Walnut St. Philadelphia, Pa. 19101	do	Do.
United Refining Co	Warren, Pa. 16365	do	Warren.
Valvoline Oil Co., Div. of Ashland Oil and Refining Co.	Freedom, Pa. 15042	do	Beaver.
Wolf's Head Oil Refining Co., Inc.	Reno, Pa. 16343	do	Venango.
Sand and gravel:			
Davison Sand & Gravel Co	34th Ave. & 4th St. New Kensington, Pa. 15068	Dredge	Westmoreland.
East Falls Sand & Gravel	R.D. 1 Falls, Pa. 18615	Pit	Wyoming.
Emlenton Limestone Co., Inc.	Box 67 Emlenton, Pa. 16373	Pit	Armstrong.
Erie Sand Steamship Co	Erie, Pa. 16500	Dredge	Erie.
Glacial Sand & Gravel Co	P.O. Box 10 Kittanning, Pa. 16201	Pit	Armstrong and Clarion.
Lycoming Silica Sand Co	401 Broad St., Box 159 Montoursville, Pa. 17754	Pit	Lycoming.
Manorville Sand Co	Box 251 Manorville, Pa. 16238	Pit	Armstrong.
Mt. Cydonia Sand Co., Inc.	R.D. 1 Fayetteville, Pa. 17222	Pit	Franklin.
Oil City Sand & Gravel Co	Wyllis & Front Sts. Oil City, Pa. 16301	Pit	Venango.
Pennsylvania Glass Sand Corp.	Hancock, W.Va. 25424	Pit	Huntingdon and Mifflin.
Pennsy Supply, Inc	1001 Paxton St. Harrisburg, Pa. 17101	Pit	Dauphin.
Seidle Sand & Gravel Inc	R.D. 4 Mercer, Pa. 16137	Pit	Mercer.
State Aggregates, Inc	635 Lucknow Lane Harrisburg, Pa. 17110	Pit	Bradford.
Tionesta Sand & Gravel, Inc.	Hawthorne, Pa. 16230	Pit	Forest.
Warner Co	1721 Arch St. Philadelphia, Pa. 19103	Pit	Bucks.
Wyoming Sand & Stone Co	Falls, Pa. 18615	Pit	Wyoming.
Smelters (zinc):			
The New Jersey Zinc Co	Palmerton, Pa. 18071	Plant	Carbon.
St. Joseph Lead Co	Josephtown, Pa. 15061	do	Beaver.
Stone:			
Limestone (crushed):			
Appalachian Stone Div. Martin Marietta Corp.	Box 120 Mercersburg, Pa. 17236	Quarry	Fayette.
Bethlehem Mines Corp.[13]	701 E. 3d St. Bethlehem, Pa. 18016	do	Adams and Lebanon.
Bethlehem Mines Corp		do	Montgomery.
Bradford Hills Quarries, Inc.	Box 231 Easton, Pa. 18042	do	Chester.
G. & W. H. Corson, Inc.[14]	Plymouth Meeting, Pa. 19462	do	Montgomery.
Eureka Stone Quarry, Inc.	Lower State and Pickertown Rds Eureka, Pa. 18914	do	Bucks.
Eastern Industries Inc	Box 188 Wescosville, Pa. 18090	do	Berks.
National Gypsum Co	325 Delaware Ave. Buffalo, N.Y. 14202	do	York.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Stone—Continued			
Sechan Limestone Co	R.D. 1 Prospect, Pa. 16052	Quarry	Butler.
Thomasville Stone & Lime Co.	Thomasville, Pa. 17364	Underground and quarry.	York.
United States Steel Corp	Hillsville, Pa. 16132	Quarry	Lawrence.
Miscellaneous (crushed):			
Better Materials Corp	Route 232 & Swamp Rd. Penns Park, Pa. 18943	do	Bucks.
Gill Quarries, Inc	P.O. Box 187 Fairview Village, Pa. 19434	do	Bucks and Montgomery.
M & M Stone Co	Harleysville, Pa. 19438	do	Montgomery.
Miscellaneous (dimension):			
Burdo & Burdo	29 Washington Ave. Belmont Heights Philadelphia, Pa. 19100	do	Do.
F. Cantono & Sons	454 Germantown Pike Lafayette Hill, Pa. 19444	do	Delaware.
Di Bonaventura Quarries Inc.	4989 W. Thompson St. Philadelphia, Pa. 19131	do	Do.
Oystershell (crushed): Reading Poultry Food Co	Orrton & Noble Sts. Reading, Pa. 19600	Plant	Berks.
Sandstone (crushed):			
American Asphalt Paving Co.	Box 95, R.D. 5 Shavertown, Pa. 18700	Quarry	Luzerne.
Connellsville Bluestone Co	Box 20 Scottdale, Pa. 15683	do	Fayette.
Coolbaugh Sand & Stone, Inc.	32 Railroad Ave. Scranton, Pa. 18505	do	Luzerne.
Detwilers Industries, Inc	New Enterprise, Pa. 16664	do	Bedford and Somerset.
Eidemiller Enterprises, Inc	Greensburg, Pa. 15601	do	Westmoreland.
Harbison-Walker Refractories Co.	2 Gateway Center Pittsburgh, Pa. 15219	do	Huntingdon and Schuylkill.
Keelor Supply Co., Inc	Box 12 Clifford, Pa. 18413	do	Susquehanna.
Latrobe Construction Co	P.O. Box 150 Latrobe, Pa. 15650	Underground	Westmoreland.
North American Refractories Co.	6th Street Bldg. Cleveland, Ohio 44114	Quarry	Carbon and Huntingdon.
No. 1 Contracting Corp. of Delaware.	Box 460 Pittston, Pa. 18640	do	Luzerne and Northampton.
State Aggregates, Inc	635 Lucknow Lane Harrisburg, Pa. 17110	do	Susquehanna.
Summit Quarries, Division of J. Robert Bazley, Inc.	P.O. Box 637 Pottsville, Pa. 17901	do	Schuylkill.
Sandstone (dimension):			
Delaware Quarries	Lumberville, Pa. 18933	do	Bucks.
Firestone Products Co., Inc.	300 Willow Grove Ave. Glenside, Pa. 19038	do	Montgomery.
Martin Stone Quarries	Box 157 Bechtelsville, Pa. 19505	do	Susquehanna.
Media Quarry Co	131 E. 2d St. Media, Pa. 19063	do	Delaware.
Penn Kress Flagstone Co., Inc.	Bridge St. Pittsburgh, Pa. 15209	do	Potter.
Powers Bros. Quarries	R.D. 5 Montrose, Pa. 18801	do	Susquehanna.
J. G. Robinson, Inc	P.O. Box 6 Fort Washington, Pa. 19034	do	Wyoming.
Paul Tompkins Estate	Hancock, N.Y. 13783	do	Wayne.
Valley Forge Building Stone Co.	P.O. Box 195 Morgantown, Pa. 19543	do	Chester.
Slate (crushed):			
GAF Corp., Bldg., Indust. & Floor Products Division.	140 West 51st St. New York, N.Y. 10020	do	York.
Pennsylvania Lightweight Aggregate, Inc.	Bangor, Pa. 18013	Plant	Northampton.
Slate (dimension):			
Albion Vein Slate Co	Bangor, Pa. 18013	Quarry	Do.
Capitol Slate Co., Inc	P.O. Box 281 East Bangor, Pa. 18040	do	Do.
Anthony Dally & Sons Inc.	Robinson Ave. Pen Argyl, Pa. 18072	do	Do.
Diamond Slate Co	P.O. Box 598 Pen Argyl, Pa. 18072	do	Do.
Doney Slate Co	Pen Argyl, Pa. 18072	do	Do.
Emerald Slate Corp	Alpha Road Wind Gap, Pa. 18091	do	Do.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Address	Type of activity	County
Stone—Continued			
Slate (dimension)—Continued			
North Bangor Slate Co	Bangor, Pa. 18013	Quarry	Do.
Penn Big Bed Slate Co., Inc.	446 Main St. Slatington, Pa. 18080	do	Lehigh.
Stephens-Jackson Co	Maine St. & Schanck Ave. Penn Argyle, Pa. 18072	do	Northampton.
D. Stoddard & Sons, Inc	Bangor, Pa. 18013	do	Do.
Traprock (basalt) Crushed:			
Bradford Hills Quarries, Inc.	Box 231 Easton, Pa. 18042	do	Berks.
Bucks County Crushed Stone, Inc.	Ottsville, Pa. 18942	do	Bucks.
V. Di Francesco & Sons	17 Mifflin Ave. Havertown, Pa. 19083	do	Chester and Delaware.
The John T. Dyer Quarry Co.	Box 188 Birdsboro, Pa. 19508	do	Berks.
Faylor Lime & Stone Co	Winfield, Pa. 17889	do	Dauphin.
GAF Corp., Bldg., Indust. & Floor Products Division.	140 West 51st St. New York, N.Y. 10020	do	Adams.
The General Crushed Stone Co.	712 Drake Bldg. Easton, Pa. 18042	do	Bucks and Delaware.
Vernon B. Horn	R.D. Chalfont, Pa. 18914	do	Bucks.
Keystone Trappe Rock Co	Glenmoore, Pa. 19343	do	Chester.
Kibblehouse Quarries, Inc	Perkiomenville, Pa. 18074	do	Montgomery.
Montgomery Stone Co., Inc.[15]	Montgomeryville, Pa. 18936	do	Do.
Pottstown Trap Rock Quarries, Inc.	R.D. 1 Douglasville, Pa. 19518	do	Berks and Montgomery.
Tohickon Quarry Co	Quakertown, Pa. 18951	do	Bucks.
Traprock (basalt)—Dimension:			
Coopersburg Granite Co	Coopersburg, Pa. 18036	do	Do.
French Creek Granite Co	St Peters, Pa. 19470	do	Chester.
Granite (crushed):			
Mignatti Constr. Co., Inc	2310 Terwood Ave. Bethayres, Pa. 19006	do	Montgomery.
Granite (dimension):			
Carl Galantino, Inc	42 Hirst Ave. E. Lansdowne, Pa. 19050	do	Delaware.
Marcolina Bros., Inc	153 E. Mermaid Lane Chestnut Hill, Pa. 19118	do	Montgomery.
Sulfur:			
Atlantic Richfield Co	260 S. Broad St. Philadelphia, Pa. 19102	Plant	Philadelphia.
Gulf Oil Corp	P.O. Box 7408 Philadelphia, Pa. 19101	do	Do.
Sinclair Oil Corp	600 Fifth Ave. New York, N.Y. 10020	do	Delaware.
Sun Oil Co	1608 Walnut St. Philadelphia, Pa. 19103	do	Do.
Talc (sericite schist): Summit Industries, Inc.	Drawer C Aspers, Pa. 17304	Pit	Adams.
Tripoli (rottenstone):			
Keystone Filler & Mfg .Co	Muncy, Pa. 17756	Pit	Lycoming.
Penn Paint & Filler Co	Antes Fort, Pa. 17720	Pit	Do.
Vermiculite (exfoliated):			
Hyzer & Lewellen	P.O. Box 155 Southampton, Pa. 18966	Plant	Bucks.
Zonolite Division, W. R. Grace & Company.	62 Whittemore Ave. Cambridge, Mass. 01109	do	Lawrence.
Zinc: The New Jersey Zinc Co.[1]	160 Front St. New York, N.Y. 10038	Underground	Lehigh.

[1] Also limestone.
[2] Also limestone and shale.
[3] Also limestone and clay.
[4] 2 operations.
[5] Also limestone and sand and gravel.
[6] Also miscellaneous clays.
[7] 3 operations.
[8] 5 operations.
[9] 4 operations.
[10] Also expanded perlite.
[11] Also byproduct cobalt and pyrites.
[12] Also byproduct gold, silver, copper, cobalt, and pyrites.
[13] Also lime.
[14] Also cement and lime.
[15] Also dimension.

☆U.S. GOVERNMENT PRINTING OFFICE: 1969 0—392-742/133